

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. – 11. (Canceled)

12. (Currently Amended) A refrigerating cycle apparatus comprising:
a refrigerating cycle formed by fluidly connecting a compressor having a suction side and a discharge side, a condenser, an expansion unit and an evaporator via a pipeline, and flowing a refrigerant through the inside thereof;

a high pressure side measurement unit that is at least one of a high pressure measurement unit for measuring ~~[[the]]~~ a high pressure ~~[[of]]~~ corresponding to a refrigerant pressure at any position on a flow passage leading from the discharge side of the compressor to the expansion unit or a condensation temperature measurement unit for measuring the saturation temperature at the high pressure;

a low pressure side measurement unit that is at least one of a low pressure measurement unit for measuring ~~[[the]]~~ a low pressure ~~that is the~~ corresponding to a pressure of refrigerant at any position on ~~[[the]]~~ a flow passage leading from the expansion unit to the suction side of the compressor or an evaporation temperature measurement unit for measuring the saturation temperature at the low pressure;

a refrigerant temperature measurement unit that is at least one of a liquid temperature measurement unit for measuring the temperature at any position on ~~[[the]]~~ a flow passage leading from the condenser to the expansion unit, a discharge

temperature measurement unit for measuring the temperature at any position on ~~[[the]]~~ a flow passage leading from the compressor to the condenser, or a suction temperature measurement unit for measuring the temperature at any position on ~~[[the]]~~ a flow passage leading from the evaporator to the compressor;

an arithmetic unit for performing ~~[[the]]~~ an arithmetic operation on ~~[[the]]~~ composite variables from ~~[[the]]~~ measured values of the high pressure side measurement unit, the low pressure side measurement unit and the refrigerant temperature measurement ~~[[the]]~~ unit; and

a judgement unit for judging ~~the abnormality~~ an operating condition of the refrigerating cycle based on ~~[[the]]~~ a comparison result by comparing ~~[[the]]~~ values stored in the past and ~~[[the]]~~ current measured values or arithmetic values, as well as storing each of the measured values or the arithmetic values,

wherein the judgement unit for judging the operating condition of the refrigerating cycle acquires a threshold for distinguishing between a normal operating condition and an abnormal operating condition by converting at least one of the measured values or the arithmetic values into another value and making the arithmetic operation on a plurality of variables including the value after conversion.

13. (Currently Amended) A refrigerating cycle apparatus comprising:

a refrigerating cycle formed by fluidly connecting a compressor, a condenser, an expansion unit and an evaporator via a pipeline and flowing a refrigerant through the inside thereof;

a normal state quantity storage unit for storing, as ~~[[the]]~~ a plurality of normal state quantities ~~[[of]]~~ corresponding to a normal operating condition, ~~[[the]]~~ state

quantities including at least ~~[[the]]~~ a state quantity obtained by making ~~[[the]]~~ an arithmetic operation on ~~[[the]]~~ a correlation between a plurality of measured values as a plurality of variables when the refrigerating cycle is normally operating;

an abnormal state quantity storage unit for storing, as ~~[[the]]~~ a plurality of abnormal state quantities ~~[[of]]~~ corresponding to an abnormal operating condition, ~~[[the]]~~ state quantities including at least ~~[[the]]~~ a state quantity obtained by making the arithmetic operation on the correlation between the plurality of measured values as the plurality of variables when there is an abnormality in the refrigerating cycle;

a comparison unit for comparing the distances between ~~[[the]]~~ current operating state quantities including at least ~~[[the]]~~ a state quantity obtained by making the arithmetic operation on the correlation between the plurality of measured values in ~~[[the]]~~ a current operating condition of the refrigerating cycle as the plurality of variables and the plurality of normal state quantities stored in the normal state quantity storage unit or the plurality of abnormal state quantities stored in the abnormal state quantity unit; and

a judgement unit for judging a degree of normality, a degree of abnormality or a cause of abnormality of the refrigerating cycle from the distances compared by the comparison unit or a change in ~~[[the]]~~ a distance.

14. (Currently Amended) The refrigerating cycle apparatus according to claim 12 wherein the judgement unit for judging the operating condition of the refrigerating cycle discriminates abnormalities comprising at least one of a refrigerant leakage from the refrigerating cycle, a refrigerant liquid back-flow to the compressor, a deterioration due to the lifetime of the compressor, a blemish or rupture on ~~[[the]]~~ a

surface of heat exchange for the condenser or the evaporator, a deterioration or failure of a blower unit of the condenser or the evaporator, clogging of a strainer for removing ~~[[the]]~~ contaminant inside the pipeline through which the refrigerant is circulated, clogging of a dryer for preventing ~~[[the]]~~ humidity of refrigerant, a bend, rupture or clogging of the pipeline, or a deterioration of a refrigerator oil useful for the compressor, or discriminates whether or not any of the abnormalities is involved.

15. (Currently Amended) The refrigerating cycle apparatus according to claim ~~[[12]]~~ 13, further comprising a learning unit having at least one state quantity of a numerical value representing the correlation of making the arithmetic operation on the plurality of measured values, ~~[[the]]~~ a plurality of arithmetic values from the measured values, or the plurality of measured values or arithmetic values as the plurality of variables, and learning at least the numerical value representing the correlation calculated as the plurality of variables in learning the state quantities of ~~[[the]]~~ a state where the refrigerating cycle is normally operating.

16. (Currently Amended) The refrigerating cycle apparatus according to claim 12, wherein ~~the judgement unit for judging the operating condition of the refrigerating cycle acquires a threshold for distinguishing between the normal operating condition and the abnormal operating condition by having the measured values or the arithmetic values such as~~ comprise a value obtained by the arithmetic operation on the measured values~~[[,]] compulsorily converting at least one of the measured values or the arithmetic values into another value, and making the arithmetic operation on a plurality of variables including the value after conversion.~~

17. (Currently Amended) The refrigerating cycle apparatus according to claim ~~[[12]]~~ 13, wherein the abnormal state quantities of the ~~abnormal operation~~ used by the judgement unit for ~~judging the operating condition of the refrigerating cycle~~ are obtained by ~~[[compulsorily]]~~ converting any one of the measured values or ~~[[the]]~~ arithmetic values obtained by making the arithmetic operation on the measured values into ~~another~~ an other value, the values converted into the ~~another~~ other value including the measured value by a refrigerant temperature measurement unit that is a liquid temperature measurement unit for measuring the temperature at any position on ~~[[the]]~~ a flow passage leading from the condenser to the expansion unit, a discharge temperature measurement unit for measuring the temperature at any position on ~~[[the]]~~ a flow passage leading from the compressor to the condenser, or a suction temperature measurement unit for measuring the temperature at any position on ~~[[the]]~~ a flow passage leading from the evaporator to the compressor, or the arithmetic value obtained by making the arithmetic operation on the measured value.

18. (Currently Amended) The refrigerating cycle apparatus according to claim ~~[[12]]~~ 13, wherein the judging the degree of abnormality of the refrigerating cycle ~~from the value~~ is obtained by making the arithmetic operation on an aggregate in which the plurality of variables are combined and associated with each other, and calculating the arithmetic operation result, and predicting a critical time at which the refrigerating cycle can not continue a stable operation.

19. (Currently Amended) The refrigerating cycle apparatus according to claim ~~[[12]]~~ 13, wherein in comparing the distances between the current operating state quantities including at least the state quantity of correlation of making the arithmetic operation on the plurality of measured values from the current operating condition of the refrigerating cycle as the plurality of variables, and the plurality of normal state quantities stored or the plurality of abnormal state quantities stored, a comparison is made between a refrigerant leakage amount that is ~~[[the]]~~ an operated state quantity in ~~[[the]]~~ a current operation or its equivalent arithmetic value and a preset refrigerant amount within the refrigerating cycle, a permissible refrigerant leakage amount or its equivalent state quantity, to predict ~~[[the]]~~ a time to lead to a critical refrigerant amount capable of keeping the cooling power of the refrigerating cycle from the comparison ~~result~~.

20. (Currently Amended) A refrigerating cycle apparatus comprising:
a refrigerating cycle formed by fluidly connecting a compressor having a suction side and a discharge side, a condenser, an expansion unit and an evaporator via a pipeline and flowing a refrigerant through the inside thereof;
a high pressure side measurement unit that is at least one of a high pressure measurement unit for measuring ~~[[the]]~~ a high pressure ~~[[of]]~~ corresponding to a refrigerant pressure at any position on a flow passage leading from the discharge side of the compressor to the expansion unit or a condensation temperature measurement unit for measuring the saturation temperature at the high pressure;
a low pressure side measurement unit that is at least one of a low pressure measurement unit for measuring ~~[[the]]~~ a low pressure ~~that is~~ corresponding to a

pressure of refrigerant at any position on ~~[[the]]~~ a flow passage leading from the expansion unit to the suction side of the compressor or an evaporation temperature measurement unit for measuring the saturation temperature at the low pressure;

a refrigerant temperature measurement unit that is at least one of a liquid temperature measurement unit for measuring the temperature at any position on ~~[[the]]~~ a flow passage leading from the condenser to the expansion unit, a discharge temperature measurement unit for measuring the temperature at any position on ~~[[the]]~~ a flow passage leading from the compressor to the condenser, or a suction temperature measurement unit for measuring the temperature at any position on ~~[[the]]~~ a flow passage leading from the evaporator to the compressor;

a judgement unit for judging ~~the abnormality~~ an operating condition of the refrigerating cycle including a refrigerant leakage by storing ~~[[the]]~~ measured values of ~~[[the]]~~ each measurement unit or ~~[[the]]~~ arithmetic values calculated from the measured values, and comparing the stored values and the current measured values or arithmetic values; and

an output unit for outputting ~~[[the]]~~ refrigerant leakage information in preference to other abnormalities of the refrigerating cycle, when the refrigerant leakage is judged.

21. (Currently Amended) The refrigerating cycle apparatus according to claim 20, further comprising an arithmetic unit for performing ~~[[the]]~~ an arithmetic operation on an aggregate in which a plurality of parameters obtained from three or more measured values measured by ~~[[the]]~~ each measurement unit are combined as ~~[[the]]~~ a plurality of variables and associated with each other to calculate the

arithmetic value, a normal state quantity storage unit for storing the measured values or the arithmetic values when the refrigerating cycle is normally operating, a comparison unit for comparing ~~[[the]]~~ distances between the arithmetic value obtained from the measured values in ~~[[the]]~~ a current operating condition of the refrigerating cycle and the arithmetic value stored in the normal state quantity storage unit or the arithmetic value obtained by making the arithmetic operation on the stored measured values, and ~~the~~ judgement unit ~~for judging the~~ judges a degree of normality, ~~[[the]]~~ a degree of abnormality or ~~[[the]]~~ a cause of abnormality for the refrigerating cycle from the distances or a change in the distances compared by the comparison unit.

22. (Currently Amended) The refrigerating cycle apparatus according to claim 20, further comprising an output unit for outputting ~~[[the]]~~ an extent of abnormality of the refrigerant leakage in the refrigerating cycle as an electric signal or communicating it as a communication code with the outside, in which a plurality of thresholds are set halfway in the distance between the arithmetic values at ~~[[the]]~~ a normal operating time and ~~[[the]]~~ an abnormal operating time, and ~~[[the]]~~ a refrigerant amount or a refrigerant leakage amount within the refrigerating cycle, or its equivalent arithmetic value, is set according to the plurality of thresholds.

23. (Currently Amended) The refrigerating cycle apparatus according to claim ~~[[12]]~~ 15, wherein ~~[[the]]~~ an arithmetic value from the measured values, the numerical value representing the correlation as the plurality of variables, ~~[[the]]~~ a value obtained by making the arithmetic operation on an aggregate in which the

plurality of variables are combined and associated with each other and calculating the arithmetic operation result, or the distance is the Mahalanobis distance or the numerical value calculated from the Mahalanobis distance.

24. – 32. (Canceled)

33. (Currently Amended) A refrigerating cycle monitoring system comprising a remote monitoring apparatus for monitoring the operating condition of a refrigerating cycle apparatus, wherein

at least one of the ~~measurement~~ measured values measured by the refrigerating cycle apparatus, ~~[[the]]~~ arithmetic values obtained by arithmetic operation, and ~~[[the]]~~ a judgement result as to whether or not the refrigerating cycle apparatus is in ~~[[the]]~~ a normal operating condition by comparing the arithmetic values are within a set threshold is transmitted via a communication line or ~~[[the]]~~ a radio communication,

the refrigerating cycle apparatus comprising:

a refrigerating cycle formed by fluidly connecting a compressor having a suction side and a discharge side, a condenser, an expansion unit and an evaporator via a pipeline, and flowing a refrigerant through the inside thereof;

a high pressure side measurement unit that is at least one of a high pressure measurement unit for measuring ~~[[the]]~~ a high pressure ~~[[of]]~~ corresponding to a refrigerant pressure at any position on a flow passage leading from the discharge side of the compressor to the expansion unit or a condensation temperature measurement unit for measuring the saturation temperature at the high pressure;

a low pressure side measurement unit that is at least one of a low pressure measurement unit for measuring ~~[[the]]~~ a low pressure ~~that is the~~ corresponding to a pressure of refrigerant at any position on ~~[[the]]~~ a flow passage leading from the expansion unit to the suction side of the compressor or an evaporation temperature measurement unit for measuring the saturation temperature at the low pressure;

a refrigerant temperature measurement unit that is at least one of a liquid temperature measurement unit for measuring the temperature at any position on ~~[[the]]~~ a flow passage leading from the condenser to the expansion unit, a discharge temperature measurement unit for measuring the temperature at any position on ~~[[the]]~~ a flow passage leading from the compressor to the condenser, or a suction temperature measurement unit for measuring the temperature at any position on ~~[[the]]~~ a flow passage leading from the evaporator to the compressor;

an arithmetic unit for performing ~~[[the]]~~ an arithmetic operation on ~~[[the]]~~ composite variables from ~~[[the]]~~ measured values of the high pressure side measurement unit, the low pressure side measurement unit and the refrigerant temperature measurement ~~[[the]]~~ unit; and

a judgement unit for judging ~~the abnormality~~ an operating condition of the refrigerating cycle based on ~~[[the]]~~ a comparison result by comparing ~~[[the]]~~ values stored in the past and ~~[[the]]~~ current measured values or arithmetic values, as well as storing each of the measured values or the arithmetic values,

wherein the judgement unit for judging the operating condition of the refrigerating cycle acquires a threshold for distinguishing between a normal operating condition and an abnormal operating condition by converting at least one of the measured values or the arithmetic values into another value and making the

arithmetic operation on a plurality of variables including the value after conversion.

34. (Currently Amended) A refrigerating cycle monitoring system comprising:

a high pressure side measurement unit that is at least one of a high pressure measurement unit for measuring ~~[[the]]~~ a high pressure ~~[[of]]~~ corresponding to a refrigerant pressure at any position on a flow passage leading from ~~[[the]]~~ a discharge side of a compressor to an expansion unit or a condensation temperature measurement unit for measuring the saturation temperature at the high pressure in a refrigerating cycle apparatus that constitutes a refrigerating cycle by fluidly connecting the compressor, a condenser, the expansion unit and an evaporator via a pipeline and flowing a refrigerant through the inside thereof ~~or condensation temperature measurement unit for measuring the saturation temperature at the high pressure;~~

a low pressure side measurement unit that is at least one of a low pressure measurement unit for measuring ~~[[the]]~~ a low pressure that is corresponding to a pressure of refrigerant at any position on ~~[[the]]~~ a flow passage leading from the expansion unit to ~~[[the]]~~ a suction side of the compressor or an evaporation temperature measurement unit for measuring the saturation temperature at the low pressure;

a refrigerant temperature measurement unit that is at least one of a liquid temperature measurement unit for measuring the temperature at any position on ~~[[the]]~~ a flow passage leading from the condenser to the expansion unit, a discharge temperature measurement unit for measuring the temperature at any position on

[[the]] a flow passage leading from the compressor to the condenser, or a suction temperature measurement unit for measuring the temperature at any position on [[the]] a flow passage leading from the evaporator to the compressor;

an arithmetic unit for acquiring [[the]] composite variables from [[the]] measured values of the high pressure side measurement unit, the low pressure side measurement unit and the refrigerant temperature measurement unit;

a storage unit for storing the measured values ~~value of the each measurement unit~~ and [[the]] arithmetic values ~~[[such as]] comprising~~ the composite variables by making [[the]] an arithmetic operation on the measured values;

a judgement unit for judging [[the]] an abnormality of the refrigerating cycle based on [[the]] a comparison result by comparing [[the]] values stored in the past by the storage unit and [[the]] current measured values or arithmetic values; ~~[[and]]~~

a transmission unit, formed by wire or radio, for transmitting the measured values or the arithmetic values or [[the]] a judgement result of the judgement unit to a remote monitoring apparatus provided at a site away from the refrigerating cycle apparatus; and

a normal state storage unit for learning and storing an arithmetic operation result of the arithmetic unit as a normal state in a condition where the refrigerating cycle is normally operating, an abnormal state storage unit for learning and storing the arithmetic operation result of the arithmetic unit as an abnormal state in a condition where the refrigerating cycle is abnormally operating, and a plurality of thresholds set halfway in a distance between arithmetic operation results of the normal state and the abnormal state that are stored, wherein a distance between the

arithmetic operation result of a current operating condition and a threshold or a temporal change in the distance is displayed in the remote monitoring apparatus.

35. (Currently Amended) A refrigerating cycle monitoring system comprising:

a normal state storage unit for storing **[[the]]** state quantities in **[[the]]** a normal operating condition that are acquired or inferred by making **[[the]]** an arithmetic operation on **[[the]]** a correlation between a plurality of variables from **[[the]]** measurement results when a refrigerating cycle formed by fluidly connecting a compressor, a condenser, an expansion unit and an evaporator via a pipeline and flowing a refrigerant through the inside thereof is normally operating;

an abnormal state storage unit for storing the state quantities in a plurality of abnormal states that are acquired by making the arithmetic operation on the correlation between a plurality of variables from the measurement results of **[[the]]** an operation when there is an abnormality in **[[the]]** circulation of the refrigerant in the refrigerating cycle, or storing a plurality of abnormal state quantities obtained by regenerating the plurality of abnormal states;

a comparison unit for comparing **[[the]]** distances between **[[the]]** current state quantities obtained from **[[the]]** a current operating condition of the refrigerating cycle and the state quantities stored in the normal state storage unit or the plurality of state quantities stored in the abnormal state storage unit; and

a judgement unit for judging **[[the]]** a degree of normality, **[[the]]** a degree of abnormality or **[[the]]** a cause of abnormality in the refrigerating cycle from the distances compared by the comparison unit or a change in **[[the]]** a distance;

wherein at least one of the current state quantities, the distances compared by the comparison unit or the change in the distance, and the degree of normality, the degree of abnormality or the cause of abnormality for the refrigerating cycle judged by the judgement unit is transmitted by a transmission unit formed by wire or radio.

36. (Currently Amended) A refrigerating cycle monitoring system according to claim 34, comprising:

a high pressure side measurement unit that is at least one of a high pressure measurement unit for measuring a high pressure corresponding to a refrigerant pressure at any position on a flow passage leading from a discharge side of a compressor to an expansion unit or a condensation temperature measurement unit for measuring the saturation temperature at the high pressure in a refrigerating cycle apparatus that constitutes a refrigerating cycle by fluidly connecting the compressor, a condenser, the expansion unit and an evaporator via a pipeline and flowing a refrigerant through the inside thereof;

a low pressure side measurement unit that is at least one of a low pressure measurement unit for measuring a low pressure corresponding to a pressure of refrigerant at any position on a flow passage leading from the expansion unit to a suction side of the compressor or an evaporation temperature measurement unit for measuring the saturation temperature at the low pressure;

a refrigerant temperature measurement unit that is at least one of a liquid temperature measurement unit for measuring the temperature at any position on a flow passage leading from the condenser to the expansion unit, a discharge

temperature measurement unit for measuring the temperature at any position on a flow passage leading from the compressor to the condenser, or a suction temperature measurement unit for measuring the temperature at any position on a flow passage leading from the evaporator to the compressor;

an arithmetic unit for acquiring composite variables from measured values of the high pressure side measurement unit, the low pressure side measurement unit and the refrigerant temperature measurement unit;

a storage unit for storing the measured values and arithmetic values comprising the composite variables by making an arithmetic operation on the measured values;

a judgement unit for judging an abnormality of the refrigerating cycle based on a comparison result by comparing values stored in the past by the storage unit and current measured values or arithmetic values; and

a transmission unit, formed by wire or radio, for transmitting the measured values or the arithmetic values or a judgement result of the judgement unit to a remote monitoring apparatus provided at a site away from the refrigerating cycle apparatus,

wherein **[[the]]** information as to **[[the]]** presumed time taken until a failure of **[[the]]** equipment occurs based on the arithmetic values measured and calculated at **[[the]]** a normal operating time and **[[the]]** an operating time elapsed of the refrigerating cycle, the arithmetic values being measured and calculated in **[[the]]** a current operating condition, is transmitted and displayed to **[[a]]** the remote monitoring apparatus via the transmission unit.

37. (Currently Amended) The refrigerating cycle monitoring system according to claim 34, ~~further comprising normal state storage unit for learning and storing the arithmetic operation result of the arithmetic unit as a normal operating state in a condition where the refrigerating cycle is normally operating, abnormal state storage unit for learning and storing the arithmetic operation result of the arithmetic unit as an abnormal operating state in a~~ wherein the condition where the refrigerating cycle is abnormally operating such as comprises a refrigerant leakage~~[[,]]~~ and a plurality of thresholds set halfway in the distance between arithmetic operation results of the normal state and the abnormal state that are stored, wherein the distance between the arithmetic operation result of the current operating condition and the threshold or a temporal change in the distance is displayed in the remote monitoring apparatus.

38. (Currently Amended) ~~[[The]]~~ A refrigerating cycle monitoring system according to claim 34, comprising:

a high pressure side measurement unit that is at least one of a high pressure measurement unit for measuring a high pressure corresponding to a refrigerant pressure at any position on a flow passage leading from a discharge side of a compressor to an expansion unit or a condensation temperature measurement unit for measuring the saturation temperature at the high pressure in a refrigerating cycle apparatus that constitutes a refrigerating cycle by fluidly connecting the compressor, a condenser, the expansion unit and an evaporator via a pipeline and flowing a refrigerant through the inside thereof;

a low pressure side measurement unit that is at least one of a low pressure measurement unit for measuring a low pressure corresponding to a pressure of refrigerant at any position on a flow passage leading from the expansion unit to a suction side of the compressor or an evaporation temperature measurement unit for measuring the saturation temperature at the low pressure;

a refrigerant temperature measurement unit that is at least one of a liquid temperature measurement unit for measuring the temperature at any position on a flow passage leading from the condenser to the expansion unit, a discharge temperature measurement unit for measuring the temperature at any position on a flow passage leading from the compressor to the condenser, or a suction temperature measurement unit for measuring the temperature at any position on a flow passage leading from the evaporator to the compressor;

an arithmetic unit for acquiring composite variables from measured values of the high pressure side measurement unit, the low pressure side measurement unit and the refrigerant temperature measurement unit;

a storage unit for storing the measured values and arithmetic values comprising the composite variables by making an arithmetic operation on the measured values;

a judgement unit for judging an abnormality of the refrigerating cycle based on a comparison result by comparing values stored in the past by the storage unit and current measured values or arithmetic values;

a transmission unit, formed by wire or radio, for transmitting the measured values or the arithmetic values or a judgement result of the judgement unit to a

remote monitoring apparatus provided at a site away from the refrigerating cycle apparatus; and

further comprising an output unit for setting ~~[[the]]~~ a refrigerant amount or refrigerant leakage amount within the refrigerating cycle as the arithmetic value equivalent to each amount and outputting the abnormality of the refrigerating cycle as an electric signal or communicating it as a communication code, wherein ~~[[if]]~~ a refrigerant leakage, if detected, is outputted to the remote monitoring apparatus prior to other judgement results of the judgement unit.

39. (Currently Amended) A refrigerating cycle monitoring system comprising:

a normal state storage unit for storing ~~[[the]]~~ an arithmetic operation result of making ~~[[the]]~~ an arithmetic operation on ~~[[the]]~~ a correlation between ~~[[the]]~~ physical quantities of a refrigerant in a condition where the refrigerant flowing through a refrigerating cycle is normal, as a normal ~~operating state condition~~, an abnormal state storage unit for storing the arithmetic operation result of making the arithmetic operation on the correlation between the physical quantities of the refrigerant in an abnormal condition where the refrigerant leaks out of the refrigerating cycle, and a refrigerant leakage foreseeing unit for foreseeing ~~[[the]]~~ a time when the refrigerant leaks out of the refrigerating cycle by comparing ~~[[the]]~~ distances between the arithmetic operation result of making the arithmetic operation on the correlation between the physical quantities of the refrigerant in ~~[[the]]~~ a current operating condition and at least one of the normal ~~operating~~ condition and the abnormal ~~operating~~ condition that are stored, wherein ~~[[the]]~~ a foreseen result of

the refrigerant leakage foreseeing unit is transmitted to a remote monitoring apparatus.